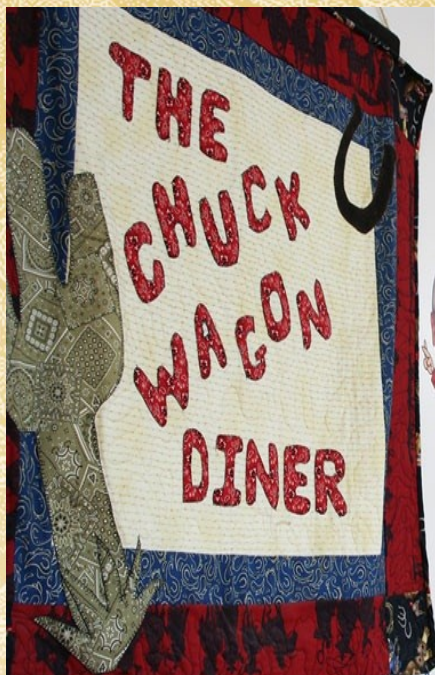


The Groundplane

SBARA—South Bay Amateur Radio Association Newsletter



Field Day Buffet is Going to Be Great in 2013!!!

The club will bring in picnic type entrées such as BBQ pulled pork or sliced beef brisket with all the fixings. Drinks, plates and flatware will be also provided.

Just bring yourself and a chair for each member of your family...remember, it will be a picnic and more informal than the potluck dinners. Any suggestions for the food or any other item for the picnic is welcomed by the Field Day planning committee. Send your ideas to wt6k@arrl.net.

Read the Groundplane and the monthly e-mail notifications for more Field Day details.

73,
Al, WT6K

Field Day: 2013 Field Day

It's that time of year again -- time to start gearing up for ARRL Field Day, June 22-23, 2013! ARRL's flagship operating event -- always held the fourth full weekend in June -- brings together new and experienced hams for 24 hours of operating fun.

Field Day packets are now available for download and include the complete rules, as well as other reference items such as forms, ARRL Section abbreviation list, entry submission instructions, a Frequently Asked Questions section, guidelines for getting bonus points, instructions for get-on-the-air stations and a kit for publicizing your event with the local press. New for 2013: Stations operating as Class A or B may begin setting up at 0000 UTC on Friday (which will be Thursday 8 PM EDT, 7 PM CDT, 6 PM MDT and 5 PM PDT). The groups may start and stop their set-up, resuming the set-up later, but may spend only a maximum of 24 hours cumulative time for setting up their sites.

UPCOMING EVENTS

DATE TIME EVENT DETAILS

June 14th. 6:00 PM SBARA Pre-meeting Dinner
 June 14th. 7:30 PM SBARA General Meeting—Hurricane Electric, Fremont
 June 21st. 11:00 AM Setup antennas Lake Elizabeth, Fremont
 June 22nd. 11:00 AM Field Day Operating Begins Lake Elizabeth, Fremont
 June 22nd. 1:00 PM Field Day Luncheon Lake Elizabeth, Fremont
 June 23rd. 10:00 AM Take Down Stations / Antennas Lake Elizabeth, Fremont

SBARA

Club station
KU6S



Please visit us at
www.sbara.org

**SOUTH BAY
AMATEUR RADIO
ASSOCIATION**

Meetings: every 2nd Friday of the month @ 7:30 p.m.
 Location: Hurricane Electric, 760 Mission Ct., Fremont

Current Events



SBARA VE Testing Schedule

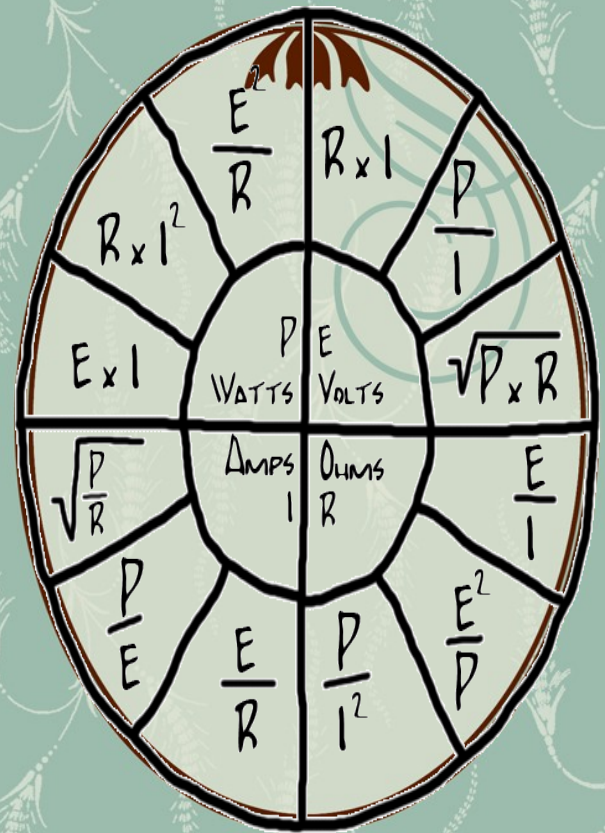
Exams will be administered at Hurricane Electric, 48233 Warm Springs Blvd., Fremont. Contact: Greg Miller, wy6p at arrl dot net for info. \$15 fee, bring a photo ID. Walk-ins allowed.

Tri-City VE Session Dates 2013

Tue Jun 11, 2013, 6:30 pm – 9:00 pm
 Sat Jul 13, 2013, 9:00 am – 11:30 am
 Tue Aug 13, 2013, 6:30 pm – 9:00 pm
 Sat Sep 14, 2013, 9:00 am – 11:30 am
 Tue Oct 8, 2013, 6:30 pm – 9:00 pm
 Sat Nov 9, 2013, 9:00 am – 11:30 am
 Tue Dec 10, 2013, 6:30 pm – 9:00p

Calling All SBARA Members—For you new members that volunteer, the week before the Festival Mike Fung WA6AWI will send you a packet with the tickets, maps, parking instructions and a food voucher for lunch. The instructions will inform you to check in at the Communication Tent where you will be assigned a Business Band Radio and where to go. We use our communication skills to communicate requests from the Ticket Booth back to the Administrator at the Communication Tent, and in reverse, from the Administrator to the Ticket Booth personnel. For example,

Volunteer to help at the Hayward Zucchini Festival!!! Loads of Fun and Free Food.



the ticket booth may need change and they will ask you to request some be brought to their booth. Also you will check people coming back in after leaving earlier for a 'stamp' indicating they have already paid. So there is a Security aspect to the work you will do.

You can bring up to four family members to enjoy the festival while you work your shift. There is a box on the webpage sign-up form to indicate the number of family member tickets you want.

We have 24 shifts on Saturday and Sunday to fill, so please help SBARA by filling one (or more) of the slots on the sign-up form. We were able to buy a new Elecraft KPA 500 amplifier and pay all Field Day expenses because of our membership's generous donation of their time at last year's Hayward Zucchini Festival. This is the only fundraiser SBARA has and it is a MAJOR financial asset to the organization.

Hope to see you there this year.

73 for Now! AI, WT6K

How Home Energy Storage Works



Solar Panels

Solar panels are typically installed on the roof and are made up of photovoltaic (PV) cells, which convert sunlight into direct current (DC) power.



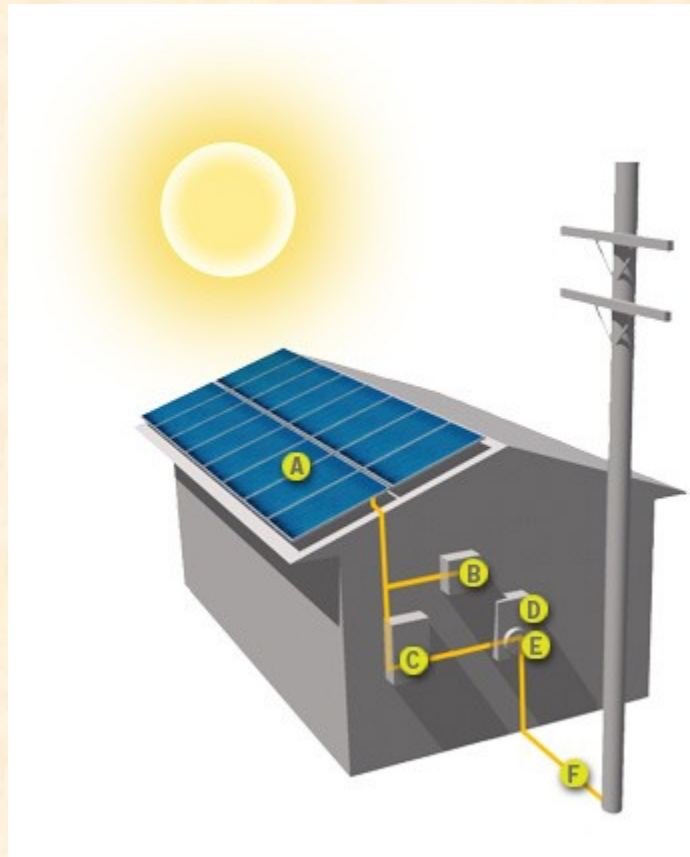
Battery Storage

Your battery system will provide power to your home in the event of a utility power outage.



Inverter

The DC power from the solar panels is sent to an inverter, where it is converted into alternating current (AC) power, or standard electrical current used to power your home.



Electrical Panel

AC power travels from the inverter to the electrical panel, often called a breaker box.



Utility Meter

The utility meter continually measures your electrical supply.



Utility Grid

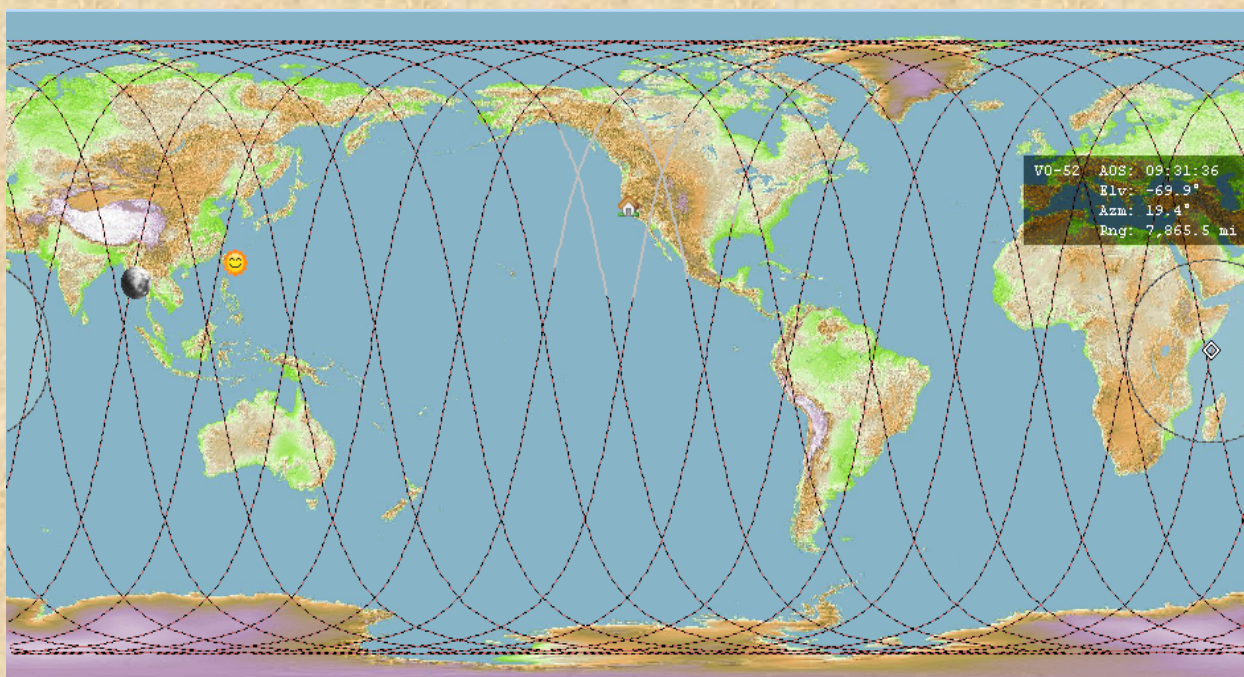
Your home remains connected to the utility grid to supply you with electricity when power is available.

Satellite Station at SBARA Field Day 2013

Working the Amateur Radio Satellites is always a lot of fun. The very concept of being able to hear their beacons is quite exciting, and having a QSO via a satellite is amazing. Add to that, the idea of reaching up to the International Space Station (ISS) is fantastic. Not to mention, doing this at a Field Day site is nothing short of thrilling.

Amateur Radio Satellites, for the most part, are small 2 foot cube micro-satellites orbiting several hundreds or even thousands of miles above the Earth. Even so they are classified as being in a Low Earth Orbit and unlike Geo-Stationary orbits they pass over the Earth in a progressing fashion like a thread on a reel, thus covering almost all areas of the Earth in a few hours. The picture below illustrates the path of a satellite over a 24 hour period.

Following are some basic things that we will need to understand to enjoy working satellites.



Pass

A pass is calculated in relation to an “observer” on Earth and defined in terms of the time of rise (AOS) and time of setting (LOS), over the horizon. Additionally, the Azimuth at AOS and at LOS and the peak Elevation, put the final touches to the pass prediction. A pass can last from a few minutes to about 20+ some minutes.

Footprint

The area of the Earth illuminated by the satellite’s signal is called its “footprint”. For a satellite passing over the middle of US is typically large enough to cover most of US. The footprint moves as the satellite traverses its path, and at any given time, all radio stations within this area have the opportunity to communicate with each other using the on-board radios like repeaters.

It is important to remember that amateur radio satellites transmit under a watt and some even down to a few hundred milliwatts. So their signals can easily be attenuated by tall buildings, tall trees and tall electrical transmission towers. In all other situations, the signals can be received with little difficulty when employing a directional antenna.

Communication Modes

Almost, all Amateur radio satellites provide full-duplex communications via separate uplink and downlink frequencies, on different bands. For example, a downlink in the VHF band around 145 MHz and an uplink in the UHF band around 435 MHz will be provided.

A set of standardized operating modes have been defined as a combination of uplink and downlink frequency and transmission mode.

A - 2 meter up-link and 10 meter down-link and supports SSB/CW.

B - 70 cm up-link and 2 meter down-link and supports SSB/CW. Some support RTTY and SSTV too.

K - 15 meter up-link and 10 meter down-link and supports SSB/CW.

JA (J Analog) - 2 meter up-link and 70 cm down-link and supports SSB/CW.

JD (J Digital) - 2 meter FM up-link and 70 cm SSB/CW down-link and supports packet.

S - 70 cm up-link and a 2.4 GHz down-link and supports SSB/CW.

T - 15 meter up-link and a 2 meter down-link and supports SSB/CW.

Some satellites operate in dual modes simultaneously. For example, mode BS means that it can do both mode B and mode S simultaneously. Other common dual modes are KT and KA.

Beacon

Additionally each amateur satellite transmits a beacon to ground stations, usually in CW, sending information of its various parameters like battery voltage, current drawn, temperature, etc. Beacons are only a few hundred milliwatts.

Doppler Correction

Satellites are like repeaters in the sky, however their rapid movement across the sky introduces a Doppler effect on both their up-link and down-link frequencies. This means the ground stations must Doppler adjust their frequencies to match those of the satellite.

Satellites that operate FM are easier to work with compared to those that support SSB or CW which require a little more experience and preferably computer controlled radios to keep up. FM satellites can support a single channel whereas SSB/CW satellites can support several QSOs simultaneously within their bandwidth.

Signal Polarization

Satellites employ circularly polarized antennas, however on some pass the orientation of the satellite reverses in relation to the operator. So suddenly a RHCP (right hand circular polarized) signal becomes LHCP signal. So unless the ground station is able to switch its antenna polarization, the signal strength drops dramatically.

Range

When the satellites are directly overhead, their distance from the ground is their orbital distance. But as they move away from this position their distance to the ground station changes enormously. For example, satellite FO-29 that has an orbital altitude of 1300 km can be 5000+ miles away from the ground station, when it nears the horizon.

There are several sources of information on the internet and in publications about amateur satellites, but understanding these basics should be enough to get started and having fun in working amateur satellites.

Satellite Station at SBARA Field Day

This will be my 2nd year putting up a satellite station at the SBARA Field Day, at Central Park in Fremont. The station will consist of one or possibly two computer controlled multi-mode transceivers and an antenna array of two crossed Yagi antennas, one tuned for 145 MHz VHF and the other tuned for 435 MHz UHF. A TNC will be included to provide 1200 baud amateur packet communication capabilities. A simple mechanical antenna rotator will be used to manually orient the antenna array, compared to previous year's elaborate arrangement.

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The software SatPC32 will be used to predict the passes, calculate the Doppler correction and control the frequencies of the radios. Software applications UISS and AGWPE will drive packet communication. Logging of contacts will be done using N1MM for voice and UISS for packet.

With the loss of two popular FM satellites AO-27 and AO-51, this year's setup will focus on operating with the ISS packet digipeater and possibly SSB via the VO-52 and FO-29 satellites. There will be several passes during Field Day and one can most certainly hear the beacons and QSOs from the satellite as it passes over the sky. On most days, it is also possible to spot the ISS visually in the sky, adding to the enjoyment.

The ISS supports FM voice for communication with the crew and a FM packet digipeater for general purpose contacts. Voice communication with the crew is extremely limited due to their daily schedules, and the little time available is reserved for school children worldwide, by specific request. Visit the ISS Fan Club website at www.issfanclub.com for more information.

Satellites VO-52 and FO-29 support SSB/CW communications and it should be a great deal of fun learning how to work with these satellites. While the software SatPC32 does most of the tracking, working with these satellites remains challenging as the station being contacted may not have the same degree of automation. The Doppler shift is quite evident and this in turn makes the radio operators work fast to catch up. In the end it'll be a lot of fun.

Hope you find this enjoyable. Wishing all a wonderful Field Day!!!

73,
Umesh Ghodke
K6VUG

Email: k6vug@arri.net

Ham Radio Class Forming:

The Salvation Army together with the Mt. Diablo Amateur Radio Club will be holding a 7 week course where you can learn everything you need to earn your Technician Class (entry level) FCC Amateur Radio License.

The Technician Class license is your entry to the world-wide excitement of Amateur Radio and Emergency Communications... and now you do NOT need to learn Morse code!

Course begins on...

Thursday August 22, 2013

at 7-9 pm

The Salvation Army

3950 Clayton Road, (at West St.)

Concord 94521

Registration is required.

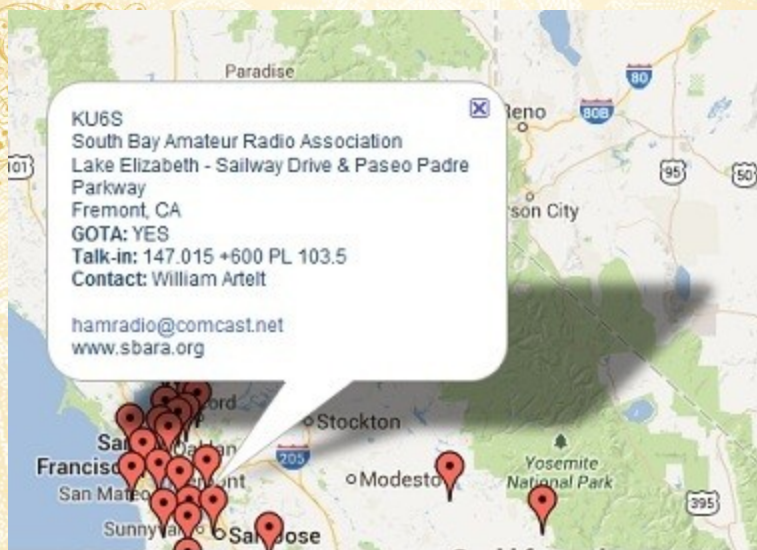
Class is FREE but there is a \$5 materials fee and Textbook if needed less than \$30. Each student must have full access to a copy of the text.

Follow up training and License testing will also be available.

To sign up email: HamRadio-

Class@gmail.com

For voice mail or fax: 925-465-9554



SBARA

2013 Field Day Location

Operating as KU6S

Multi—Op Operation, High Power, Multiple HF Bands, Satellite too!!

The SBARA Monday Net Takes Place....

Every Monday night at 7:30 pm on the WA6PWW (currently N6IMS) repeater, 147.015 MHz, positive offset, PL (if enabled) 103.5 Hz.

The Slow CW Net Takes Place....

Every Thursday and Sunday night at 7:30 pm, Thursday on 144.230 MHz and Sunday on 7.057MHz +/- 3 kHz

Make it a Fun Experience!!

SBARA Happenings!!

Next Meeting—June 14, 2013

Dinner Preceding the Meeting
at 6PM

Club Meeting—June 14, 7:30
PM

Field Day Antenna Setup—June
21, 9AM

Field Day June 22-23

Field Day Lunch Pot Luck 2PM

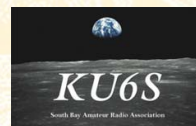
Pre –Meeting Dinner Family Style!!

Ho Chow Restaurant located at 47966 Warm Springs Blvd. Fremont Dinner is at 6PM

South Bay Amateur Radio Association —
SBARA
The Ground Plane — KU6S
<http://www.sbara.org>
P.O. Box 8401

K U 6 S
KILO UNIFORM SIX SIERRA

3 A ... E B
THREE ALPHA ... EAST BAY



WWW.SBARA.ORG

South Bay Amateur Radio Association—SBARA